

Dixie 1967

Forest Insect Conditions on the
Dixie National Forest and in Bryce Canyon National Park
1967

The following report is an evaluation of current forest insect problems on the Dixie National Forest and in Bryce Canyon National Park in 1967. Since two of the forest insect problems--the mountain pine beetle and white fir needle miner--are actually single infestations and are common to both the Forest and Park, we have combined the evaluations into a single report, instead of preparing separate reports as has been done in the past. Material for this report was compiled from previous evaluation reports, from aerial survey maps and data, from special evaluation surveys, and from less intensive examinations of other insect problems on the Forest and Park this year.

The principal forest insect problems in 1967 were the mountain pine beetle in ponderosa pine and the white fir needle miner which occur on both the Forest and Park, and a spruce mealybug which occurs primarily on the Forest. Briefly, the mountain pine beetle has killed several hundred ponderosa pine over a wide area with the heaviest concentration of mortality showing up on Whiteman Bench in the Forest and Park. Since the infested trees are so widely scattered and examinations indicate no significant increase in tree killing, control is not recommended. White fir needle miner populations are at a low level and may maintain that status through 1968. Mealybug populations persist on Engelmann spruce on the Aquarius Plateau but remain at an almost endemic level.

Mountain pine beetle, Dendroctonus ponderosae Hopk.

Aerial survey observers recorded an increase in beetle-killed ponderosa pine in several areas of the Forest and Park this year. The most serious infestation appears to be on the Powell Ranger District in the East Fork of the Sevier River and in adjoining Bryce Canyon National Park. Less serious infestations of widely scattered intensity were observed in the lower fringes of ponderosa pine type in portions of the Escalante and Teasdale Ranger Districts. These and other areas of insect-caused damage are shown on the copy of the aerial survey map mailed at an earlier date.

Many of the infested areas were examined at separate times during the fall. The first examination was made on September 18 by entomologist, Kendall Lister, and forestry technician, Otto Sandin, in company with Edward Harvey, Dixie Forest TM Staff. A second and third evaluation was made by entomologist, William Klein, on September 18, with Bryce Canyon National Park Rangers, Bill Wendt and Harold Thompson, and later, on October 31, with Powell District Ranger, Bruce Hronek, and his assistant, Neal Riffle.

Heaviest tree killing occurred on Whiteman Bench on the Forest and in Bryce Canyon National Park. Less serious but significant mortality occurred on the Forest between Skunk Creek and Mill Hollow and in the Park, west of the Canyon rim, from the head of Ingram Hollow, south to Puma Hollow. Considerably lighter beetle activity of widely scattered intensity occurs

throughout most of the East Fork drainage wherever there is ponderosa pine. Aerial observers estimated approximately 400-500 red tops scattered over the entire infestation.

Both brood and tree conditions were extremely variable throughout the infestation area. Although most of the brood trees harbored the mountain pine beetle, which was considered to be the primary insect, several trees were found to contain populations of both the mountain pine beetle and the western pine beetle (D. brevicornis Lee.), while only a few trees were solely attacked by the western pine beetle. There is little doubt, however, that the mountain pine beetle is the principal cause of mortality.

The extremely cool spring and late summer retarded brood development in practically all areas. On September 18, mountain pine beetle flight was in progress; and although both fresh and aged attacks were noted, gallery construction and egg deposition had yet to begin. The western pine beetle was found in practically all stages--larvae, pupae, teners, and adults--but it was late enough in the year that these broods will be forced to overwinter. Two weeks later, on October 31, near the King Creek Campground, several ponderosa pines exhibiting relatively fresh mountain pine beetle attacks were examined and found to contain egg galleries only two to three inches long with very few eggs laid. With the onset of cold weather, whatever egg deposition had been done had ceased and will not resume until the advent of warm weather in spring of 1968. Both of these life stages, egg and fecund adult, are able to withstand extreme cold, and if winter temperatures are not overly severe, both stages should exhibit a high rate of survival. If these broods and their progeny experience normal spring and early summer temperatures, emergence, flight, and subsequent new attacks should begin during the last week of July.

Coincident with the slow insect development, many of the host trees failed to exhibit normal discoloration signs. Normally, ponderosa pine attacked by the mountain pine beetle one year begins to fade the following spring, and by late summer, fading is complete. In 1967, however, many of the trees attacked in 1966 were still green, even though their broods had completely emerged. To further complicate matters, many trees attacked in 1965 exhibited typical fading characteristics of trees attacked and killed in 1966. What this means is that these variable conditions, including the scattered nature of the infestation, make it very difficult to accurately assess the situation. It is believed that the 1965 attacks (which resemble 1966 ^{attacks} faders) exceed the 1966 attacks (which did not fade) thereby resulting in a less serious situation than initially assumed. Examinations also indicated that the ratio of new attacks (1967) to old attacks (1966) was approximately 1:1, meaning that as many trees will be attacked and killed in 1967 as were in 1966. If a strong buildup is in the making, it certainly is not apparent.

Control under the present circumstances would be extremely difficult, if not impractical. For control to be effective, all infested trees over the entire area would have to be located and treated. Considering the relatively light attack density, the scattered nature of the attacks, and the extensive area involved, a survey to locate all of the infested trees would be both costly and time consuming. There is little doubt that the cost of such a survey would far exceed the actual cost of treatment.

Long-term control of the mountain pine beetle and western pine beetle can best be obtained by planned and orderly conversion of the mature and over-mature ponderosa pine to a young, vigorous state. Individual tree control will momentarily reduce losses in areas where logging is contemplated, but it does not materially change the conditions responsible for the outbreak in the first place--the maintenance of low vigor, mature, and overmature ponderosa pine. In Bryce Canyon National Park and in other high-use recreational areas, some protection can be obtained by timely treatment of desirable trees by application of preventative chemicals. If this type of treatment is desired, we will be glad to furnish whatever technical assistance is necessary.

White fir needle miner, Epinotia meritana Hein.

White fir needle miner populations, which in the past have caused considerable damage to white fir on the Forest and in the Park, decline to a low level this year. Heavy populations and resultant defoliation were, for the most part, practically nonexistent; and the few remaining areas of discernible activity, as reported by the aerial survey, were in portions of Cougar Hollow and Upper Crawford Creek. No damage was observed in Whiteman Bench on the Forest and Park, on Rainbow Point in the Park, and in the upper reaches of the East Fork Drainage on the Forest. Most of these areas experienced significant defoliation just four years ago.

On-the-ground evaluations made throughout the general infestation area more or less confirmed most of these aerial findings. During early August, no needle miner activity or its damage was found in Kanab and Blubber Creeks where it was first reported in 1963. Some activity, although of very light intensity, was found in Crawford Creek and Cougar Hollow. At this time the insect was in the egg stage; and the only sign of past damage was the presence of a few mined needles, most had fallen to the ground.

Evidently natural factors of unknown origin last winter and spring played a significant part in reducing last year's high population level to a tolerable status this year. This respite will give many of the heaviest damaged trees a chance to recover. A more completed evaluation of expected needle miner activity will be made in the spring, for predictions based solely on fall populations have proven to be somewhat unreliable.

A spruce mealybug, Puto sandini

The known areas of mealybug infested Engelmann spruce on the Aquarius Plateau, first discovered in 1953, remained at a very low level again this year. No visible damage was recorded during the aerial survey. Followup ground examinations were made in early August by entomologist, Douglas Parker, and forestry aid, William Dryden, in both the Griffin Top and Barney Top infestations but no significant activity was found. On the Griffin Top, near Griffin Springs, a few mature female mealybugs were observed on the lower trunks of a few spruce but no foliar infestations or damage was found. In the Barney Top area, no mealybug activity of any kind was present except for a few empty male pupae cases. Even though Engelmann spruce in both of these areas have supported mealybug populations for some time, no discernible damage of any form has occurred, nor is any expected to occur in the immediate future, at least not in 1968.

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